

REMARKS

The claimed invention

Claim 53 recites a method of assembling a tissue engineered articular cartilage construct. The method includes transfecting a plurality of chondrocytes with a gene for IGF-I and seeding the transfected cells onto a biocompatible matrix comprising poly(glycolic acid). Claim 53 has been amended to recite that at least a portion of the transfected cells synthesize collagen type II. This amendment is supported by material throughout the specification, for example, page 22, line 7.

Rejections under 35 U.S.C. § 103

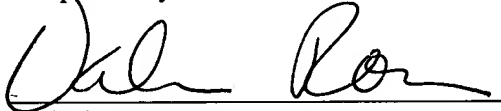
Claims 53-63 stand rejected under 35 U.S.C. 103 as being obvious over Naughton in view of Breitbart. Applicant submits claims 53-63 are patentable in view of Naughton and Breitbart, whether considered separately or together. The Examiner states that the claims fail to recite that the chondrocytes do not de-differentiate into fibroblasts. Applicant submits that the claims recite that the transfected cells produce collagen type II, a type of collagen that is produced by chondrocytes but not by fibroblasts. Applicants further submit that, absent the maintenance of the chondrocyte phenotype, there is no motivation to combine the references cited by the Examiner. Applicant submits that, at best, it would be obvious to try the combination of Naughton and Breitbart. However, neither of these references provide any reasonable expectation that the combination would be successful. See In re Vaeck, 947 F.2d 488 (Fed. Cir. 1991) (“[A] proper analysis under § 103 requires, inter alia, consideration of ... whether the prior art would also have revealed that ... those of ordinary skill would have a reasonable expectation of success.”).

That it is difficult to maintain chondrocytes in culture is well known and is discussed by the declaration of Gordana Vunjak-Novakovic, Ph.D. submitted with the Office Action Response dated September 15, 2004. Applicant submits herewith a copy of Schnabel, et al., Dedifferentiation-associated changes in morphology and gene expression in primary human articular chondrocytes in cell culture, *Osteoarthritis and Cartilage* (2002) **10** 62-70. The paper provides a thorough analysis of the mechanisms of chondrocyte dedifferentiation and a discussion of the difficulties this provides for the development of biological therapies for arthritis

and other disorders and injuries of cartilage. In contrast, page 20, line 22 – page 23, line 10 describe how cells transfected and seeded according to an embodiment of the invention maintain the chondroncyte phenotype and synthesize collagen type II, typically synthesized by chondrocytes, and not of collagen type I, which is synthesized by fibroblasts. Therapeutic applications for articular cartilage will be far more effective if they result in the production of collagen type II, the type of collagen found in articular cartilage, rather than collagen type I, a component of tissues such as bone and skin. As a result, applicant submits that claims 53-63 are patentable in view of Naughton and Breitbart, whether considered separately or together.

A Request for Continued Examination and a Petition for Extension of Time, along with the appropriate fees, are enclosed herewith. Please charge any additional fees associated with this filing, or apply any credits, to our Deposit Account No. 03-1721.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Valarie B. Rosen', is written over a horizontal line.

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